

**We claim:**

1. A control unit for controlling mixed light illumination, especially for a microscope, to which plural lighting units are connected to provided the mixed light illumination, wherein said control unit comprises means for simultaneously controlling respective parts of at least two of said lighting units according to user commands during at least one time interval.
2. The control unit as defined in claim 1, further comprising means for adjusting brightness of said respective parts of said lighting units, whereby the brightness of said respective parts of said lighting units is regulated.
3. The control unit as defined in claim 1, further comprising an interface for at least one computer so that data exchange can occur between the at least one computer and the control unit.
4. The control unit as defined in claim 3, further comprising at least one memory device, and wherein said user commands are storable and retrievable in and from said at least one memory device.
5. The control unit as defined in claim 4, further comprising means for storing and retrieving said user commands in groups from said at least one memory device

and wherein said user commands in each of said groups are simultaneously stored and retrieved from said at least one memory device.

6. The control unit as defined in claim 4, wherein said at least one computer comprises a memory unit, and further comprising means for sending said user commands in said memory device to said memory unit of said at least one computer and means for receiving said user commands in said memory unit of said at least one computer.

7. The control unit as defined in claim 1, further comprising means for storing and retrieving said user commands.

8. The control unit as defined in claim 7, wherein said means for storing and retrieving said user commands comprises at least one of function keys and a foot switch.

9. The control unit as defined in claim 7, further comprising an interface for connecting the control unit to a computer so that data exchange occurs between the computer and the control unit by means of control statements provided in said computer, said data exchange including said user commands.

10. The control unit as defined in claim 1, further comprising an interface for at least one external image-taking device and means for interval control of at least

one of the lighting units based on control signals from said at least one external image-taking device.

11. The control unit as defined in claim 10, wherein said interval control simulates a moving light source.

12. The control unit as defined in claim 10, wherein said interval control synchronizes a plurality of said lighting units.

13. The control unit as defined in claim 1, further comprising means for detecting a temperature of said lighting units, said means for detection said temperature of said lighting units being at least partially located in said lighting units, and means for generating a warning signal for an operator when said temperature detected by said means for detecting exceeds a threshold temperature.

14. The control unit as defined in claim 13, further comprising means for detecting an operating current strength for current flowing through said lighting units and wherein the threshold temperature depends on said operating current strength.

15. The control unit as defined in claim 1, further comprising means for detecting a temperature of said lighting units, said means for detection said temperature of said lighting units being at least partially located in said lighting units, and means

for shutting off said lighting units when said temperature detected by said means for detecting exceeds a maximum allowed temperature of said lighting units.

16. The control unit as defined in claim 15, further comprising means for detecting an operating current strength for current flowing through said lighting units and wherein the maximum allowed temperature depends on said operating current strength.

17. A control unit for controlling mixed light illumination for a microscope, to which a plurality of lighting units is connected to provide the mixed light illumination, wherein said control unit comprises

means for simultaneously controlling respective parts of at least two of said lighting units according to user commands during at least one time interval in order to regulate or adjust said respective parts of said lighting units, whereby brightness of said respective parts of said lighting units is regulated;

at least one memory device for storing said user commands, from which said user commands are storable and retrievable; and

means for input of said user commands including an interface for a computer so that data exchange can occur between the computer and the control unit and at least one of function keys and a foot switch, said data exchange including transmission and reception of said user commands.

18. The control unit as defined in claim 17, further comprising means for storing and retrieving said user commands in groups in and from said at least one memory device and wherein said user commands in each of said groups are simultaneously stored and retrieved from said at least one memory device.

19. A control unit for controlling mixed light illumination for a microscope, to which a plurality of lighting units is connected to provide the mixed light illumination, wherein said control unit comprises

means for simultaneously controlling respective parts of at least two of said lighting units according to user commands during at least one time interval in order to regulate or adjust said respective parts of said lighting units, whereby brightness of said respective parts of said lighting units is regulated;

at least one memory device for storing said user commands, from which said user commands are storable and retrievable;

means for input of said user commands including an interface for a computer so that data exchange can occur between the computer and the control unit and at least one of function keys and a foot switch, said data exchange including transmission and reception of said user commands;

an interface for at least one external image-taking device for generating control signals for the mixed light illumination; and

means for interval control of at least one of the lighting units based on said control signals from said at least one external image-taking device.

20. The control unit as defined in claim 19, wherein said interval control simulates a moving light source.
21. The control unit as defined in claim 19, wherein said interval control synchronizes a plurality of said lighting units.
22. The control unit as defined in claim 19, further comprising means for detecting a temperature of said lighting units, said means for detection said temperature of said lighting units being at least partially located in said lighting units, and means for generating a warning signal for an operator when said temperature detected by said means for detecting exceeds a threshold temperature.
23. The control unit as defined in claim 22, further comprising means for detecting an operating current strength for current flowing through said lighting units and wherein the threshold temperature depends on said operating current strength.
24. The control unit as defined in claim 19, further comprising means for detecting a temperature of said lighting units, said means for detection said temperature of said lighting units being at least partially located in said lighting units, and means for shutting off said lighting units when said temperature

detected by said means for detecting exceeds a maximum allowed temperature of said lighting units.

25. The control unit as defined in claim 24, further comprising means for detecting an operating current strength for current flowing through said lighting units and wherein the maximum allowed temperature depends on said operating current strength.